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187
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,071	02/07/2001	Takashi Takeuchi	202937US2S	7369
22850	7590	05/10/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			RAMANA, ANURADHA	
			ART UNIT	PAPER NUMBER

3732

DATE MAILED: 05/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/778,071	TAKEUCHI ET AL.	
	Examiner	Art Unit	
	Anu Ramana	3732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 4-7 and 10 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11 is/are allowed.
- 6) ☒ Claim(s) 1-3, 8 and 12-18 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

Claims 3, 12-13 and 16-18 are objected to because of the following informalities.

The Examiner had objected to these claims in the previous office action, as the units of impedance appeared to be incorrect. However, it is the Examiner's suggestion that Applicants revert to the original units disclosed in the specification to avoid any confusion or the issue of new matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 18, lines 4-5, it is unclear what impedance range is being claimed by the Applicants.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 8 is rejected under 35 U.S.C. 102(b) as being anticipated by Saitoh et al. (US 5,295,487).

Saitoh et al. disclose an array-type ultrasonic probe having a plurality of piezoelectric members 11 wherein each piezoelectric element is constructed of a single crystal piezoelectric, for e.g. lead titanate; a lower or "first" electrode 14; a backing

Art Unit: 3732

member 12; and a flexible printed wiring board 17 having a plurality of pattern wires arranged between electrode 14 and the backing member 12 wherein each pattern wire extends in a longitudinal direction of each piezoelectric element and has a width smaller than the width of each piezoelectric element (Figure 2, col. 8, lines 43-59 and col. 9, lines 22-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 12-13 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barthe et al. (US 6,049,159) in view of Tezuka (US 6,308,389).

Barthe et al. disclose an ultrasonic element having a single-crystal array-like 2-2 composite piezoelectric member 110 having electrical connection layers or "electrodes" 116A and 116B, formed on the upper and lower surfaces, respectively, of member 110 wherein electrodes 116A and 116B are formed of a suitable conductive material (col. 2, lines 63-67, col. 3, lines 1-67 and col. 4, lines 1-64).

Barthe et al. further disclose that frontal matching layer 114 can be combined with electrode 116B by forming matching layer 114 of a conductive material to minimize impedance mismatch at the boundaries between 110 and the electrode (col. 4, lines 1-23 and lines 37-64).

Barthe et al. do not disclose that the conductive material is a conductive resin.

Tezuka teaches an acoustic matching layer 14 made of a conductive resin (epoxy filled with a silver frit) for electrically connecting the matching layer 14 to a piezoelectric member 2 (col. 6, lines 60-64).

Accordingly it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made matching layers 114 and 120 of a

Art Unit: 3732

conductive resin since it was known in the art that a matching layer could be made of a conductive resin for electrical connectivity to an electrode/piezoelectric member.

Regarding claims 3, 12-13 and 16-18, the combination of Barthe et al. and Tezuka discloses the claimed invention except for the claimed range of acoustic impedances. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided an upper or lower resin layer with an impedance in a range of 2×10^6 g/m² sec to 10×10^6 g/m²s to minimize impedance mismatch, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Claims 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanafy et al. (US 5,916,169).

Hanafy et al. disclose a plurality of piezoelectric members 50, a backing block or "member" 58 supporting the piezoelectric members and a flexible circuit 56 with traces or "pattern wires" 80 extending in a longitudinal direction of the piezoelectric members wherein the width of each wire 80 is smaller than a width of each piezoelectric member (Fig. 2, col. 4, lines 66-67, col. 5, lines 1-67 and col. 6, lines 1-3).

Hanafy et al. disclose the claimed invention except for the piezoelectric members being formed of a single-crystal containing at least lead titanate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the transducer elements in the Hanafy et al. device of single-crystal lead titanate, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Art Unit: 3732

Allowable Subject Matter

Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 11 is allowed.

Response to Arguments

Applicant's arguments filed submitted under "REMARKS" in the response filed on January 27, 2005 have been fully considered but are not persuasive for the following reasons.

With regard to claim 8, prevention of the occurrence of chipping when the piezoelectric member is cut is a method step, which is not being claimed by the Applicant.

With regard to claims 1, 2, 12 and 13, obviousness is not determined on the basis of purpose alone. In re Graf, 343 F.2d 774, 777, 145 USPQ 197, 199 (CCPA 1965). It is sufficient if the prior art clearly suggests doing what applicants have done, although the underlying explanation of exactly why this should be done, other than to obtain the expected superior beneficial results is not taught or suggested in the cited references. In re Gershon, 372 F.2d 535, 539, 152 USPQ 602, 605 (CCPA 1967). As long as there is some suggestion/motivation within the prior art to make the modification or combination it does not have to be the same as the applicant's.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

Art Unit: 3732

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anu Ramana whose telephone number is (571) 272-4718. The examiner can normally be reached at Monday through Friday between 8:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached at (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AR *Anu Ramana*
May 5, 2005

Kevin Shaver
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